

MATERIAL SAFETY DATA SHEET
ARMSTRONG PU-100 TWO PART POLYURETHANE ADHESIVE PART B
HARDENER

Issue Date: 1 June 2009

Section 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

PU-100 Two Part Polyurethane Adhesive Part B Hardener

SYNONYMS

“PU-100 Part B Hardener”

PRODUCT USE

For bonding vinyl floor-coverings.

SUPPLIER

Company: Armstrong World Industries (Australia) Pty Ltd.

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Section 2 – HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCES CLASSIFICATION:

Classified as hazardous to health according to the criteria of the National Occupational Health and Safety Commission, Australia

Harmful by inhalation.

Irritating to eyes, respiratory system and skin.

May cause sensitization by inhalation and skin contact.

RISK

May produce discomfort of the eyes,
respiratory tract & skin
Possible skin sensitiser

SAFETY

Avoid contact with skin

Wear eye/face protection

In case of contact with eyes rinse with plenty of
water and contact Doctor or Poisons Information
Centre.

Section 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Component	Amount	Classification	CAS #	EC#
Diphenylmethane Diisocyanate, isomers and homologues	100.0 %	Xn: R20; Xi: <i>R36/37/38;</i> <i>R42/43</i>	9016-87-9	Not applicable
4, 4'-Methylenediphenyl Diisocyanate; Diphenylmethane-4,4'diisocyanate (MDI)	> 40.0 - <50.0 %	Xn: R20; Xi: <i>R36/37/38;</i> <i>R42/43</i>	101-68-8	202-966-0

See Section 16 for full text of R-phrases.

Note: CAS 101-68-8 is an MDI isomer that is part of CAS 9016-87-9.

Section 4 – FIRST AID MEASURES

EYE CONTACT:

Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

SKIN CONTACT:

Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. An MDI skin decontamination study demonstrated that cleaning very soon after exposure is important, and that a poly-glycol-based skin cleanser or corn oil may be more effective than soap and water. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Safety shower should be located in immediate work area.

INHALATION:

Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

INGESTION:

If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

NOTES TO PHYSICIAN:

Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants and antitussives may be of help. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. If you are sensitized to Diisocyanates, consult your physician regarding working with other respiratory irritants or sensitizers. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Excessive exposure may aggravate pre-existing asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

Section 5 – FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:

Water-fog or fine spray. Dry chemical fire extinguishers, Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective. ***Do Not Use Direct Water Stream, May Spread Fire.***

FIRE FIGHTING PROCEDURES:

Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water is not recommended, but may be applied in large quantities as a fine spray when other extinguishing agents are not available. Do not use direct water stream. May spread fire. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Use water spray to cool fire-exposed containers and fire-affected zone until fire is out. Contain fire water run-off if possible. Fire water runoff, if not contained, may cause environmental damage. Review the "Accidental Release Measures and the "Ecological Information" sections of this MSDS.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS:

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Some components of this product will burn in a fire situation. Product reacts with water. Reaction may produce heat and/or gases. This reaction may be violent. Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

HAZARDOUS COMBUSTION PRODUCTS:

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Isocyanates. Hydrogen Cyanide. Carbon Monoxide. Carbon Dioxide.

See Section 9 for related Physical Properties

Section 6 – ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Contain spilled material if possible. Absorb with materials such as: Sawdust, Dirt, Vermiculite, Sand, or Clay. Do NOT use absorbent materials such as: Cement powder (Note: may generate heat). Collect in suitable and properly labelled open containers. Do not place in sealed containers. Suitable containers include: Metal drums, Plastic drums, Polylined fibre packs. Wash the spill site with large quantities of water.

Attempt to neutralize by adding suitable decontaminant solution: **Formulation 1:** Sodium carbonates 5-10%; liquid detergent 0.2 - 2%; water to make up to 100% or **Formulation 2:** Concentrated ammonia solution 3 - 8%; liquid detergent 0.2 - 2%; water to make up to 100%. If ammonia is used, use good ventilation to prevent vapour exposure.

See Section 13, Disposal Considerations, for additional information.

PERSONAL PRECAUTIONS:

Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. If available, use foam to smother or suppress. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection

See Section 7, Handling, for additional precautionary measures.

See Section 10 for more specific information.

ENVIRONMENTAL PRECAUTIONS:

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

See Section 12, Ecological information.

Section 7 – HANDLING AND STORAGE

HANDLING:**General Handling:**

Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Avoid breathing vapour. Keep container tightly closed. Use with adequate ventilation. Wash thoroughly after handling.

See Section 8, Exposure Controls and Personal Protection.

Other Precautions:

Spills of these organic materials on hot fibrous insulations may lead to lowering of the auto ignition temperatures possibly resulting in spontaneous combustion.

STORAGE:

Store in a dry place. Protect from atmospheric moisture. Maintain a nitrogen atmosphere. Do not store product contaminated with water to prevent potential hazardous reaction. See Section 10 for more specific information. Store the product between 15 - 35 °C

Section 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

COMPONENT	LIST	TYPE	VALUE
Diphenylmethane	AUOEL	TWA as NCO	0.02 mg/m ³
Diisocyanate, Isomers and homologue	AUOEL	STEL as NCO	0.07 mg/m ³
4, 4'.Methylenediphenyl	ACGIH	TWA	0.005 ppm
Diisocyanate	AUOEL	TWA	0.02 mg/m ³
Diphenylmethane-4,4' Diisocyanate (MDI)	AUOEL	STEL	0.07 mg/m ³

A "SEN" notation following the exposure guideline refers to the potential to produce sensitization, as confirmed by human or animal data.

PERSONAL PROTECTION:

Eye & Face Protection:

Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent. Eye wash fountain should be located in immediate work area.

Skin Protection:

Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly.

Hand protection:

Use chemical resistant gloves classified under standard AS/NZS 2161.10: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene, Chlorinated Polyethylene, Ethyl Vinyl Alcohol Laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton, Neoprene, Natural Rubber ("latex"), Polyvinyl Chloride ("PVC" or "vinyl"). Nitrile/Butadiene Rubber ("nitrile" or "NBR"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to AS/NZS 2161.10) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to AS/NZS 2161.10) is recommended.

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection:

Atmospheric levels should be maintained below the exposure guideline. When atmospheric levels may exceed the exposure guideline, use an approved air-purifying respirator equipped with an organic vapour sorbent and a particle filter. For situations where the atmospheric levels may exceed the level for which an air-purifying respirator is effective, use a positive-pressure air-supplying respirator (air line or self-contained breathing apparatus). For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. The following should be effective types of air-purifying respirators: Organic vapour cartridge with a particulate pre-filter.

Ingestion:

Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

ENGINEERING CONTROLS:**Ventilation:**

Use only with adequate ventilation. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Exhaust systems should be designed to move the air away from the source of vapour/aerosol generation and people working at this point. The odour and irritancy of this material are inadequate to warn of excessive exposure. Local exhaust ventilation may be necessary for some operations.

Other Information:

Selection and use of personal protective equipment should be in accordance with the Recommendations in one or more of the relevant Australian/New Zealand Standards, including:

AS/NZS 1336: Recommended practices for eye protection in the industrial environment.

AS/NZS 1337: Eye protectors for industrial applications.

AS/NZS 1715: Selection, use and maintenance of respiratory protective devices.

AS/NZS 2161: Occupational protective gloves.

AS/NZS 221Q: Occupational protective footwear.

AS 2919: Industrial clothing.

Section 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State	liquid
Colour	Brown
Odour	Musty
Flash Point - Closed Cup	> 204 °C Vendor
Flammable limits In Air	Lower: No test data available Upper: No test data available
Auto-ignition Temperature	No test data available
Vapour Pressure	< 0.00001 mmHg @ 25 °C
Boiling Point (760 mmHg)	No test data available
Vapour Density (air = 1)	No test data available
Specific Gravity (H ₂ O = 1)	1.24 Vendor
Freezing Point	No test data available
Melting Point	No test data available
Solubility in Water (by weight)	insoluble, reacts, evolution of CO ₂
pH	No test data available
Decomposition Temperature	No test data available
Kinematic Viscosity	No test data available

Section 10 – CHEMICAL STABILITY AND REACTIVITY INFORMATION

Stability/Instability:

Stable under recommended storage conditions. *See Storage, Section 7.*

Conditions to Avoid:

Avoid temperatures above 41°C. Avoid temperatures below 20°C. Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid. Avoid moisture. Material reacts slowly with water, releasing carbon dioxide which can cause pressure build-up and rupture of closed containers. Elevated temperatures accelerate this reaction.

Incompatible Materials:

Avoid contact with: Acids, Alcohols, Amines, Water, Ammonia, Bases, Metal compounds, Moist air and Strong oxidizers. Diisocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact; these reactions can become violent. Contact is increased by stirring or if the other material mixes with the Diisocyanate.

Diisocyanates are not soluble in water and sink to the bottom, but react slowly at the interface. The reaction forms carbon dioxide gas and a layer of solid polyurea. Reaction with water will generate carbon dioxide and heat. Avoid contact with metals such as: Aluminium, Zinc, Brass, Tin, Copper and Galvanized metals. Avoid contact with absorbent materials such as: Moist organic absorbents. Avoid unintended contact with polyols. The reaction of polyols and Isocyanates generate heat.

Hazardous Polymerization:

Can occur, and elevated temperatures can cause hazardous polymerization. Polymerization can be catalysed by: Strong bases and Water.

Thermal Decomposition:

Decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition.

Section 11 – TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Ingestion:

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Typical for this family of materials. LD50, Rat > 10,000 mg/kg

Eye Contact:

May cause moderate eye irritation. May cause slight temporary corneal injury.

Skin Contact:

Prolonged contact may cause slight skin irritation with local redness. May stain skin.

Skin Absorption:

Prolonged skin contact is unlikely to result in absorption of harmful amounts. ***Typical for this family of materials. LD50, Rabbit > 2,000 mg/kg***

Inhalation:

At room temperature, vapours are minimal due to low volatility. However, certain operations may generate vapour or mist concentrations sufficient to cause respiratory irritation and other adverse effects. Such operations include those in which the material is heated, sprayed or otherwise mechanically dispersed such as drumming, venting or pumping. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause pulmonary edema (fluid in the lungs.) Effects may be delayed. Decreased lung function has been associated with overexposure to Isocyanates. ***LC50, Aerosol, Rat 490 mg/m3***

SENSITIZATION

Skin:

Skin contact may cause an allergic skin reaction. Animal studies have shown that skin contact with Isocyanates may play a role in respiratory sensitization.

Respiratory:

May cause allergic respiratory response. MDI concentrations below the exposure guidelines may cause allergic respiratory reactions in individuals already sensitized. Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

Repeated Dose Toxicity:

Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

Chronic Toxicity and Carcinogenicity:

Lung tumours have been observed in laboratory animals exposed to respirable aerosol droplets of MDI/Polymeric MDI (6 mg/m³) for their lifetime. Tumours occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MOL

Developmental Toxicity:

In laboratory animals, MDI/polymeric MDI did not cause birth defects; other fatal effects occurred only at high doses which were toxic to the mother.

Genetic Toxicology:

Genetic toxicity data on MDI are inconclusive. MDI was weakly positive in some in vitro studies; other in vitro studies were negative. Animal mutagenicity studies were predominantly negative.

Section 12 – ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE

Movement & Partitioning:

In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyurea's.

Persistence and Degradability:

In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyurea which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related Diisocyanates.

Ecotoxicity:

The measured eco-toxicity is that of the hydrolyzed product, generally under conditions maximizing production of soluble species. Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

Toxicity to Soil Dwelling Organisms:

LC50, Earthworm Eisenia Foetida, adult, 14 d: > 1,000 mg/kg

Section 13 – DISPOSAL CONSIDERATIONS

This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 91/689/EEC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local bylaws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water. Incineration under approved, controlled conditions using incinerators suitable or designed for the disposal of hazardous chemical wastes, is the preferred method for disposal. Small quantities of waste may be pre-treated for example with polyols, to neutralise prior to disposal.

Empty drums should be decontaminated (see Section 6) and either punctured and scrapped or given to an approved drum reconditioner.

Section 14 – TRANSPORTATION INFORMATION

ADG NOT REGULATED, IMDG NOT REGULATED & ICAO/IATA NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

Section 15 – REGULATORY INFORMATION

US. Toxic Substances Control Act:

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

European Inventory of Existing Commercial Chemical Substances (EINECS):

The components of this product are on the EINECS inventory or are exempt from inventory requirements.

Australia. Industrial Chemical (Notification and Assessment) Act:

The principal components and additives of this product are included in the Australian Inventory of Chemical Substances (AICS) or comply with the requirements of the Industrial Chemicals (Notification and Assessment) Act 1989.

Polson Schedule: S6**Classification and User Label Information:**

Hazard Symbol: Xn Harmful.

Risk Phrases: R20 - Harmful by inhalation.

R36/37/38 - Irritating to eyes, respiratory system and skin.

R42/43 - May cause sensitization by inhalation and skin contact.

Safety Phrases: S23 - Do not breathe vapour/gas/fumes/spray.

S24 - Avoid contact with skin.

S37 - Wear suitable gloves.

S45 - In case of accident or if you feel unwell. Seek medical advice immediately (show the label where possible).

S60 - This material and its container must be disposed of as hazardous waste.

Contains Isocyanates. See information supplied by the manufacturer.

Section 16 – OTHER INFORMATION

Material Safety Data Sheets are updated frequently. Please ensure that you have a current copy.

This MSDS summarises at the date of issue our best knowledge of the health and safety hazard information of the product, and in particular how to safely handle and use the product in the workplace. Since Armstrong World Industries (Australia) Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, review this MSDS in the context of how the user intends to handle and use the product in the workplace.

If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact this company.

Our responsibility for product as sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available upon request.